IN THE CLAIMS

1. (currently amended) A method for determining at least one of motion and location parameters of a railroad locomotive, with the locomotive oriented with either end thereof in the lead in the direction of travel of the locomotive, said method comprising the steps of:

providing at least two satellite signal receivers on the locomotive at spaced locations along the length of the locomotive;

determining a set of phase differences between satellite reference signals received by satellite receivers; and

determining an accurate heading, accurate heading rate, attitude, and attitude rate of the locomotive during normal locomotive transit operation using the set of phase differences between the satellite reference signals, wherein the locomotive is self-propelled or propelled in a consist with other locomotives, wherein the heading is aligned with the direction of travel of the locomotive based on whether the locomotive is oriented in a cab forward or cab reverse orientation of travel.

2. (previously presented) A method according to Claim 1 further comprising the step of determining a vector distance $\vec{\mathbf{d}}$ between two antennas mounted to the locomotive.

3. (previously presented) A method according to Claim 2 further comprising the step of determining $\vec{\mathbf{d}}$ as $\vec{\mathbf{d}} = (\mathbf{H}^T\mathbf{H})^{-1}\mathbf{H}^T\vec{\mathbf{y}}$, where:

$$\mathbf{H} = \begin{bmatrix} LOS_x^1 & LOS_y^1 & LOS_z^1 \\ LOS_x^2 & LOS_y^2 & LOS_z^2 \\ \vdots & \vdots & \vdots \\ LOS_x^n & LOS_y^n & LOS_z^n \end{bmatrix};$$

$$\vec{\mathbf{y}} = \begin{bmatrix} \Delta\phi^1 - \lambda(N_1^1 - N_2^1) - c(dt_1 - dt_2) \\ \Delta\phi^2 - \lambda(N_1^2 - N_2^2) - c(dt_1 - dt_2) \\ \vdots \\ \Delta\phi^n - \lambda(N_1^n - N_2^n) - c(dt_1 - dt_2) \end{bmatrix}; \text{ and}$$